

# SOME DIAGNOSTIC TESTS

PLEASE

DO

NOT

WRITE

ON

THIS

PAGE

SOME STANDARD DIAGNOSTIC TESTS	
Substance Tested	Diagnostic Test
water	If cobalt(II) chloride paper is exposed to a liquid or vapor, and the paper turns from blue to pink, then water is likely present.
oxygen	If a glowing splint is inserted into the test tube, and the splint glows brighter or relights, then oxygen gas is likely present.
hydrogen	If a flame is inserted into the test tube, and a squeal or pop is heard, then hydrogen is likely present.
carbon dioxide	If the unknown gas is bubbled into a limewater solution, and the limewater turns cloudy, then carbon dioxide is likely present.
halogens	If a few millilitres of a chlorinated hydrocarbon solvent is added, with shaking, to a solution in a test tube, and the color of the solvent appears to be <ul style="list-style-type: none"> <li>• light yellow-green, then chlorine is likely present.</li> <li>• orange, then bromine is likely present.</li> <li>• purple, then iodine is likely present.</li> </ul>
acid	If strips of blue and red litmus paper are dipped into the solution, and the blue litmus turns red, then an acid is present.
base	If strips of blue and red litmus paper are dipped into the solution, and the red litmus turns blue, then a base is present.
neutral solution	If strips of blue and red litmus paper are dipped into the solution, and neither litmus changes color, then only neutral substances are likely present.
neutral ionic solution	If a neutral solution is tested for conductivity with a multimeter, and the solution conducts a current, then a neutral ionic substance is likely present.
neutral molecular solution	If a neutral solution is tested for conductivity with a multimeter, and the solution does not conduct a current, then a neutral molecular substance is likely present.

*There are thousands of diagnostic tests. You can create some of these, using data from the periodic table (inside front cover of this book); and from the data tables in Appendix F, pages 608 to 611, and on the inside back cover.*

## ION COLORS ↴

ION COLORS			
Ion	Flame Color	Ion	Solution Color
Li <sup>+</sup>	bright red	Groups 1, 2, 17	colorless
Na <sup>+</sup>	yellow	Cr <sup>2+</sup>	blue
K <sup>+</sup>	violet	Cr <sup>3+</sup>	green
		Co <sup>2+</sup>	pink
Ca <sup>2+</sup>	yellow-red	Cu <sup>+</sup>	green
Sr <sup>2+</sup>	bright red	Cu <sup>2+</sup>	blue
Ba <sup>2+</sup>	yellow-green	Fe <sup>2+</sup>	pale green
		Fe <sup>3+</sup>	yellow-brown
Cu <sup>2+</sup>	blue (halides) green (others)	Mn <sup>2+</sup>	pale pink
		Ni <sup>2+</sup>	green
Pb <sup>2+</sup>	light blue-grey	CrO <sub>4</sub> <sup>2-</sup>	yellow
Zn <sup>2+</sup>	whitish green	Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	orange
		MnO <sub>4</sub> <sup>-</sup>	purple

FOR

USE

IN CLASS ONLY

FLAME TEST ↴